

In the Claims:

Please further amend claims 5, 8 and 10, cancel claims 6 and 7 and add new claims 15 and 16 as set forth below in the “Listing of Claims”.

LISTING OF CLAIMS

Claims 1-4 (Canceled)

Claim 5 (Currently Amended): A thermal processing unit for conducting a thermal process to a plurality of objects to be processed held in a tier-like manner in a processing container, wherein

the processing container is cylindrically shaped and made of metal,
a heating unit that heats the objects to be processed, and a cooling-gas introducing unit having a plurality of blowing holes for introducing a cooling gas into respective areas in the processing container divided in a height direction of the objects to be processed, are provided in the processing container,

a circular space is formed between the processing container and the plurality of objects to be processed held in a tier-like manner,

the cooling-gas introducing unit is a plurality of cooling-gas introducing pipe pipes arranged at intervals in a circumferential direction arranged in of the circular space and extending in a vertical the height direction, the plurality of cooling-gas pipes having different lengths in the height direction,

the plurality of blowing holes is formed at suitable intervals in the vertical a longitudinal direction of the each cooling-gas introducing pipe for blowing a slewing flow of the cooling gas circumferentially about in a tangential direction of the circular space, and

each blowing hole is formed at a pipe wall of the cooling-gas introducing pipe to face in the same circumferential tangential direction of the processing container such that each blowing hole blows out the cooling gas in a the tangential direction of the circular space, the plurality of blowing holes for uniformly cooling said objects.

Claims 6-7 (Cancelled)

Claim 8 (Currently Amended): A thermal processing unit for conducting a thermal process to a plurality of objects to be processed held in a tier-like manner in a processing container, wherein

the processing container is cylindrically shaped and made of metal,

a heating unit that heats the objects to be processed, and a cooling-gas introducing unit having a plurality of blowing holes for introducing a cooling gas into respective areas in the processing container divided in a height direction of the objects to be processed, are provided in the processing container, and

the each blowing hole is provided with a porous member;

wherein the cooling-gas introducing unit is a plurality of cooling-gas introducing pipe pipes arranged at intervals in a circumferential direction of a circular space of the processing container and extending in a vertical direction vertically along a side wall of the processing container, each cooling-gas introducing pipe comprising a plurality of blowing holes arranged vertically in the height direction above one another along the pipe, the circular space being formed between the processing container and the plurality of objects to be processed held in a tier-like manner, the plurality of blowing holes for blowing a slewing flow of the cooling gas circumferentially about in a tangential direction of the circular space to uniformly cool said objects and

wherein each blowing hole is formed at a pipe wall of the cooling-gas introducing pipe to face in the same circumferential tangential direction of the processing container such that each blowing hole blows out the cooling gas in a said tangential direction of the circular space, the cooling gas not coming directly into contact with said objects.

Claim 9 (Previously Presented): A thermal processing unit according to claim 5, wherein the processing container has a volume of about 170 liter, and the cooling-gas introducing unit is capable of introducing a cooling gas into the processing container at a flow rate of 300 to 500 liter / min.

Claim 10 (Currently Amended): A thermal processing unit according to claim 5, wherein the processing container has a container-cooling unit provided therein having a spirally provided coolant passage in which a coolant flows.

Claim 11 (Original): A thermal processing unit according to claim 10, wherein the cooling-gas introducing unit and the container-cooling unit are capable of cooling the objects to be processed to a temperature of 400 °C to 100 °C at a temperature-fall rate not less than about 40 °C / min.

Claim 12 (Previously Presented): A thermal processing unit according to claim 8, wherein

the processing container has a volume of about 170 liter, and the cooling-gas introducing unit is capable of introducing a cooling gas into the processing container at a flow rate of 300 to 500 liter /min.

Claim 13 (Previously Presented): A thermal processing unit according claim 8, wherein the processing container has a container-cooling unit in which a coolant flows.

Claim 14 (Previously Presented): A thermal processing unit according to claim 13, wherein

the cooling-gas introducing unit and the container-cooling unit are capable of cooling the objects to be processed to a temperature of 400 °C to 100 °C at a temperature-fall rate not less than about 40 °C / min.

Claim 15 (New): A thermal processing unit according to claim 8, wherein the processing container has a container-cooling unit provided therein having a spirally provided coolant passage in which a coolant flows.

Claim 16 (New): A thermal processing unit according to claim 8, said porous member comprising a silica porous layer.